

SEMICONDUCTOR DEVICE AND ITS MANUFACTURE

Patent Number: JP9167857
Publication date: 1997-06-24
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Requested Patent: ☐ JP9167857
Application Number: JP19950327259 19951215
Priority Number(s):
IPC Classification: H01L33/00; H01L27/12
EC Classification:
Equivalents:

Abstract

PROBLEM TO BE SOLVED: To reduce the internal resistance of a device and to make it possible to inhibit the heat generation in the interior of the device by a method wherein a metal thin film layer is formed on an insulative signal crystal substrate and a semiconductor multilayer structure part is formed on this metal thin film layer.

SOLUTION: An aluminum thin film layer 202 is formed on an insulative sapphire substrate 201 and an AlN buffer layer 203 for relaxing a lattice mismatching of the substrate 201 with an epitaxially grown layer is formed thereon. Moreover, an n-type Si-doped GaN layer 204, which is a GaN compound semiconductor layer, an n-type Si doped InGa_{0.5}N 205 and a p-type Mg-doped GaN layer 206 are formed in multilayer on this layer 203 and electrodes 207 are respectively formed on the layers 204 and 206. Thereby, the internal resistance of an element can be reduced and the heat generation in the interior of the element can be inhibited.

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